

REMARKS

The Amendment, filed in response to the Office Action mailed on February 24, 2009, is believed to fully address all and every issues raised in the Office Action. Favorable reconsideration on the merits and allowance of the application are respectfully requested.

Claims Disposition and Summary of Amendments

In the current Amendment, entry of which is respectfully requested, claims 1-9 and 18 are canceled without prejudice or disclaimer. Claims 14-17 are amended in order to more clearly set forth the claimed subject matter by reciting the asymmetric hydrogenation is performed in the presence of a chiral ruthenium complex catalyst. Claims 10-13 are amended to change claims dependencies according to the cancellation of claims 1-9. Claims 19-22 are newly added. Support for the amended claims 14-17 may be found by the disclosure of the specification at page 41, lines 9-12, page 45, lines 7-27; and page 47, line 27-page 48, line 19. New claims 19-22 are supported by original claims 10 - 14. No new matter is introduced.

Thus, upon entry of the Amendment, claims 10-17 and 19-22 are all the claims pending in the application.

The specification is amended to correct a typographical error.

Formal Matters

Applicant thanks the Examiner for acknowledging claim for foreign priority and receipt of the copies of certified copies of the priority document.

Applicant further thanks the Examiner for returning an initialed copy of SB/08 Form submitted on May 10, 2006, indicating all the references listed in the SB/08 Form were considered.

Response to Rejection of Claims 1-18 under 35 U.S.C. § 103

In the Office Action, claims 1-18 stand rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over US 7,002,037 (“US ‘037”) in view of *J. Amer. Chem. Soc.*, 1998, 120, 4345-4353 (“JACS ‘98”). The Office provides detailed discussions of the references and claimed invention on pages 2-15 of the Action.

Applicant respectfully traverses at least for the following reasons.

First, the rejection of claims 1-8 and 18 are rendered moot by the cancellation of these claims.

Regarding claims 10-17, 21, and 22, Applicant argue as follows.

In the Office Action, the Office asserts that elements of asymmetric hydrogenation is implied by US ‘037 (paragraph 9 of the Office Action); claims do not recite a specific agent or catalyst to be used for the hydrogenation (e.g., paragraphs 5-7 of the Office Action); and US’ 037 fails to teach the different substituents of claims 14-18 (paragraphs 27-31 of the Office Action).

The Office relies on JACS '98 as teaching asymmetric hydrogenation in which alpha-alkoxy esters are prepared by asymmetric hydrogenation with a chiral rhodium catalyst, [(S,S)-Et-DUPHOS-Rh⁺]; and the desired (S)-enantiomer is acquired through application of the (S,S)-chiral Et-DUPHOS attached to the rhodium.

In response, Applicant respectfully submits that the combination of US ‘037 and JACS '98 does not teach all and every elements of currently presented claims of the instant application.

Furthermore, it was not predictable for one skilled in the art to reach a claimed method by modifying the teaching of US ‘037 in view of JACS '98. JACS '98 discloses subjecting an α,β-unsaturated carboxylic acid having an O-acyl group on position α to an asymmetric

hydrogenation in the presence of a chiral catalyst (Table 3, page 4349, substrate 4i). One skilled in the art would consider that the O-acyl group of JACS '98 is an essential element of the asymmetric hydrogenation, because at the time the publication of JACS '98, there were at least two other publications teaching asymmetric hydrogenation of an olefin and other compounds in which an acyl group is necessarily involved in asymmetric hydrogenation. These two publications are as follows:

(1) J. Org. Chem. 1980, 45, 2362-2365

J. Org. Chem. describes that in order to carry out an asymmetric hydrogenation of an olefin, it is necessary for an acyl group to be coordinated with a central metal of a catalyst (see especially the left column of page 2362, lines 14-20). In this connection, 7a (α -acetamidoacrylic acid) and 7c (α -acetoxyacrylic acid) in Fig. 2 on page 2363 have an N-acyl group and an O-acyl group, respectively.²

(2) J. Am. Chem. Soc., Vol. 102, No. 2, 838-840 (1980)

J. Am. Chem. Soc., 1980 describes that an acyl group on position α (amino group) is coordinated with a central metal of a catalyst and an asymmetric hydrogenation of a compound which does not have an acyl group on a position α cannot produce a compound which has sufficient optical activity (see especially the left column of page 839, lines 18-28).³

² A copy of J. Org. Chem. is submitted under a separate transmittal letter for Examiner's convenience. As these references are submitted as evidence support Applicant's arguments in response to the Office's assertions, it is believed that no IDS is required.

³ A copy of J. Am. Chem. Soc. (1980) is submitted under a separate transmittal letter for Examiner's convenience. As these references are submitted as evidence support Applicant's arguments in response to the Office's assertions, it is believed that no IDS is required.

From the above teachings available to one skilled in the art at the time of the publication of JACS '98 and the filing of the instant application, those skilled in the art would not consider or predict a compound having highly optical activity can be obtained when a cinnamic acid of the formula (4) or a 4-hydroxycinnamic acid of the formula (9) is subjected to an asymmetric hydrogenation. That is because one skilled in the art would not be able to predict that -OR² (position α) of the cinnamic acid of the formula (4) and the 4-hydroxycinnamic acid of the formula (9) of the instant application would be coordinated with a central metal of a catalyst.

Therefore, Applicant respectfully submits that the rejection under 35 U.S.C. § 103 is not sustainable and withdrawal is respectfully requested.

Response to the Rejection Under 35 U.S.C. § 112

In the Office Action, claims 1-18 stand rejected under 35 U.S.C. § 112, first paragraph as lacking an enabling disclosure in commensurate in scope.

Rejection of claims 1-9 and 18 are rendered moot by the cancellation of these claims.

Without acquiescing the rejection or commenting on the merits of the rejection, solely in order to compact the prosecution of the application, claims 14-17 are amended to incorporate the type of a chiral catalyst and to amend the scope of the variables, rendering the rejection moot. Claims 10-13, 19-22 are directly or indirectly dependent from claims 14-17, and thus properly enabled for the same reasons as those for claims 14-17.

Accordingly, it is believed that the rejection is not sustainable and its withdrawal is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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